Regularities and Irregularities in Rhetorical Move Structure of Linguistics Abstracts in Research Articles

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ABSTRACT

Awareness of abstract writing skill plays an important role for research article (RA) abstract writers to meet the discourse community expectations. In academic writing, writers should persuade readers to read the whole article by writing an effective abstract in terms of both content and rhetorical structure. This paper utilised Swales' (1990) theory as considers abstract as an independent discourse because of its distinctive function and indicates the content and structure of the whole text. Swales also highlights the format of the abstract as having I-M-R-D pattern. The underlying assumption is that the associated RAs follow the IMRD structures and their abstracts are also likely to exhibit the same move pattern. This study investigated 130 English research article abstracts in linguistics journals in order to identify the move patterns found in RA abstracts in terms of moves and steps. In addition, it established move cycling in the structuring of an abstract. The findings indicated that 63.84% of the abstracts followed the IMRD structure that was premised to reflect the structure of the main text. Findings from this research provide new insights into abstract writing in linguistics articles, in particular, with regard to the actual practice in the use of the IMRD move patterns and how the related genres in RA are similar or different. These findings have pedagogical implications as writers could be given training in the various aspects of writing to satisfy the rhetorical structure for information flow.

Keywords: abstract; IMRD structure; move cycling; rhetorical move; step

INTRODUCTION

Writing an acceptable abstract, especially when it should meet the expectations of the target journal is a daunting and challenging task. Abstract as a sub-genre of the research article (hereafter RA) genre (Swales & Feak 2009) or an embedded genre in the longer genre of RAs (Biber & Conrad 2009), is the first part that a reader encounters in reading an article published in a journal. Readers, by reading an abstract, make decisions about reading the rest of the article. The abstract also acts as a means in controlling and managing the information flow in the scientific community (Ventola 1994), and gatekeepers of reputable journals often follow stringent guidelines about requirements of abstract writing before accepting an article

for publication. According to ISO 214, an abstract is 'an abbreviated, accurate representation of the contents of a document', which 'enables readers to identify the basic content of a document quickly and accurately, to determine its relevance to their interests, and thus to decide whether they need to read the document in its entirety' (1976:1). Martin-Martin (2003, 2005) believes that one of the main functions of the abstract is its time-saving role. Swales (1981) supposes the abstract as an independent discourse because of its distinctive function and postulates that an abstract indicates the content and structure of the whole text.

As a result of the many roles and functions of the abstract, the structure of abstracts and their variations have been extensively studied and various models have been presented to account for the rhetorical structure of RA abstract as having a structure of Introduction–Methods–Results–Conclusion (IMRC) (Martin 2003), Introduction–Methods–Results–Discussion (IMRD) (Ventola, 1994), and Objective–Methods–Results–Conclusion (OMRC) (Melander et al. 1997). These variations of the overall structure of abstracts are present too in the field of applied linguistics and theoretical linguistics, the focus of this study. Santos (1996), Hyland (2000), Dahl (2004), Lores (2004), and Pho (2008) have investigated both the rhetorical organization and linguistic features of abstracts in linguistics. However, only a few studies generally had studied the relationship between two related genres, that of the abstract and the RA (Bhatia 1993; Samraj 2005).

Notwithstanding a lack of consensus among scholars concerning a standard pattern in abstract writing (Martín 2003; Phuong Dzung 2008; Sauperl et al. 2008, Loan et al. 2014, Chan & Ebrahimi, 2012), the IMRD structure as an academic norm, however, is accepted as a standard pattern approved by most researchers because the structure apparently satisfies the ISO 214 and American National Standard definitions (Lores 2004). Moreover, Swales (1990) also highlights the format of the abstract as having Introduction, Method, Results and Discussion (IMRD) structure which is similar to that of the main article. Given the diverse attention to the state of research in this area, the researchers of this study embarked on an investigation to examine the structures of the abstracts as to the extent they mirror the IMRD structure and the kind of variations they may follow in terms of their development. In general, the following research questions are addressed:

1. To what extent the rhetorical structure of abstracts follow the structure of their RAs in terms of IMRD structure?
2. What are the rhetorical moves in each IMRD units of abstracts?
3. How constituent moves in rhetorical structure of abstracts are cycled?

LITERATURE REVIEW

Much research has been done on move analysis of the RA abstract, which constitute the macrostructure, with only a few focusing on the internal structure of the abstract to describe the move structure of each IMRD units in the abstract. For example, Martin-Martin's (2003) working on the analysis of the move-step structure of the 160 RA abstracts in experimental social sciences found that move 3 in CARS model, 'occupying the niche', was the most frequent move in the Introduction unit of abstracts written in English, and the most frequent step in this move to be 'announcing the present research'. In addition, move number one, 'establishing a territory', was found to be the second most common move in the Introduction of an abstract, and 'making topic generalization' was the most established step that constituted step 2 in move 1.

Lores (2004) in analysing the rhetorical moves of RA abstracts in linguistics journals found two major types of rhetorical organization: IMRD type and the CARS type. In addition, a minor rhetorical organization used both types as 'combinatory types'. Melander et al. (1997), assessed 90 abstracts in three disciplines: that of Medicine, Biology and Applied

Linguistics written in American English and Swedish. They found that the IMRD structure is implemented in linguistics and medicine, but the RA abstracts in biology focused more on method and results sections. Moreover, Santos' (1996) study focused on RA abstracts in applied linguistics. He added one extra move, namely, 'situating the research' to the abstract structure. This move is stated at the beginning of the abstract and there were two sub-moves that of "statement of current knowledge" and "statement of problem". In general, she presented 5 moves for the rhetorical structure of applied linguistics abstracts: 'situating the research', 'presenting the research', 'describing the methodology', 'summarizing in findings', and 'discussing the research'. Pho (2008) also analysed the RA abstracts in applied linguistics and educational technology. He found that M1, M2, and M3 in Santos's (1996) model was obligatory moves in these two disciplines, however 'discussing the research' move was more prevalent in applied linguistics abstracts and 'situating the research' move was the least frequent move in both fields.

As mentioned earlier, the relationship between two related genres has been considered only in a few studies. Bhatia (1993) believes that the Introduction of an RA and the abstract are closely related, although the essence of this relationship is not completely obvious. Both the Introduction and the abstract play a central role in the RA as it serves to attract the audience to the substance of the writing. However, these two related sub-genres include different rhetorical organizations because they follow different micro communicative purposes (Bhatia 1993). Furthermore, Samraj (2005) investigated the relationship between the Introduction and the abstract in Conservation Biology and Wildlife Behaviour articles. She found that RA Introductions and abstracts in Conservation Biology bore a greater similarity in function and organization compared to those in Wildlife Behaviour. This finding reveals that disciplinary variation in academic writing is not just manifested in generic structure, but also in the relationship among genres.

METHOD

THE CONSTRUCTION OF THE CORPUS

A total of 130 English RA abstracts were used in the present study. The corpus consisted of a Linguistics journal (applied and theoretical) articles published in the period 2008 to 2014. RA abstracts were selected from 12 journals. The corpus of the study is shown in Table 1.

TABLE 1. Names of journals and number of selected journal articles

Name of journals	Number
English for Specific Purposes (ESP)	27
English for Academic Purposes (EAP)	15
Journal of Pragmatics	10
Australian Journal of Linguistics	8
Southern African Linguistics and Applied Linguistics Studies	6
Journal of Second Language Writing	6
Journal of English Studies	3
Journal of Phonetics	18
Research on Language and Social Interaction	3
Journal of Quantitative Linguistics	9
Language Acquisition	3
Language Sciences	22
Total	**130**

In order to collect the data, the RAs were browsed from the website of Science Direct. All the identified volumes of RAs in each journal were downloaded in order to provide the corpus of the study. This selection was based on the IMRD structure of RAs. It means that some of

RAs had merging sections such as 'Results and Discussion' or some sections were not found in their structures. Thus, these RAs were rejected from the corpus of this study and only the RAs with individual sections of IMRD were considered for the corpus of the present study. The reason for choosing IMRD RAs was to assess the similarity of the structure of RAs with their abstracts to examine whether IMRD RAs include abstracts with IMRD structure as well, thus substantiating whether or not abstracts follow the RAs in terms of the structure of RAs.

The reason for the unequal numbers of selected journal articles from the journals was due mainly to the IMRD constraint. Not all articles follow this distinct structure. Another consideration was to select exemplary articles in the sense that they have been published by reputable journals to show acceptance by highly qualified members of a discourse community. According to the Journal Citation Report (JCR), and social sciences edition (2012), provided by ISI web of knowledge, all the selected journals have a high impact factor, and that gives the representation of well-written articles in the field. All the RAs were selected with the conventional section format of Introduction, Method, Results, and Discussion (IMRD) that focus on Linguistics. Another criterion for building the corpus of the study was that the abstract had to be written in one paragraph. All the RA abstracts constituted of one paragraph in order to avoid conceptual overlapping among paragraphs (Salager-Meyer, 1990).

DATA ANALYSIS

The IMRD units in the corpus were analysed individually based on a composite framework (refer to Appendix A). The method of identifying moves in the current study encompassed the identification of a range of constructions ranging from word level to that of a clause or several sentences. Where appropriate, each segment was assigned a move label. The frequency of moves in each unit was then tabulated.

As the abstract is a short text, it often incorporates two (dual) moves in a single sentence. According to Bhatia (1993), this is a common feature in abstract writing, especially in experimental studies. For example, introducing purpose and describing methodology are often embedded in the same sentence. Santos (1996), who focuses exclusively on the field of Applied Linguistics, also found that 'move embedding' occurs in many cases of RA abstracts and a sentence in an abstract can express two or even three functions (moves) simultaneously (Pho 2008).

Both bottom-up and top-down approaches can be used to identify the moves. Identifying moves through particular linguistic features are pertinent to a bottom-up approach, while the realisation of moves by content is a top-down approach. However, the top-down approach in many previous studies, including the work by Swales (1990) was criticised for its subjectivity in evaluation. As a result, it led to a lack of explicit categorization rules (Lores 2004). To tackle this problem, Crooks (1986), Kanoksilapatham (2003), and Pho (2008) advocate inter-rater checking to minimise such subjectivity. In this study, two PhD students coded the text in order to obtain a reasonable inter-rater reliability coefficient. In addressing this issue, the present analysis also paid close attention to illustrative examples of linguistic signals offered by the models to guide move identification.

In this study, the cut-off frequency of 50% of occurrence was established as quasi-obligatory and optional moves (Swales 1990). If a move occurred above 50% was considered as quasi-obligatory move and if the frequency of a move falls below 50%, it is deemed as optional. In addition, moves that occurred at 100% were considered as completely obligatory moves.

FINDINGS AND DISCUSSION

The data were analysed by identifying the moves and steps in the IMRD structure of the abstracts. The initial analysis of the rhetorical structure of 130 RA abstracts in terms of IMRD structure indicated that 81 RA abstracts followed the IMRD structure, which translated into about 63.84% of the corpus. The rest of the abstracts (36.13%) did not.

In general, it could be said that the majority of the abstracts followed the international conventions of using the IMRD structure. This suggests that the four fundamental structural units of the RAs in the abstracts substantiated the abstracts as serving a mirror of the RAs (Swales 1990 and ISO 214 and American National Standard definition). Salager-Meyer (1992) who analysed 84 well-structured Medical abstracts, asserts that the abstracts which include the 4 units of Introduction, Method, Results and Discussion are more complete. Table 2 shows the structural units. As can be seen, the complete abstracts with the four structural units showing the IMRD pattern accounted for only 63.84 % of the corpus. The remaining 36.13 % constituted abstracts that had 3 units (32.30%), with 2.30% of them using 2 units and another 1.53% indicating the 1 unit structure.

TABLE 2. The number of units and its frequency for abstract structure

No. of units in abstract structure	Frequency
4 Units	83 (63.84%)
3 Units	42 (32.30%)
2 Units	3 (2.30%)
1 Unit	2 (1.53%)

Table 3 shows the specific type and frequency of the IMRD combinations in the abstracts studied.

TABLE 3. Type and frequency of abstract structures

Type of abstract structure	Frequency
IMRD	83 (63.84%)
IMD	21 (16.15%)
IMR	14 (10.76%)
MRD	3 (2.30%)
IRD	2 (1.53%)
ID	2 (1.53%)
I	2 (1.53%)
IM	1 (0.76%)
IDM	1 (0.76%)
MID	1 (0.76%)
Total	130

It is apparent that the conventional full structure (IMRD) was not used in all of the abstracts, and that variations were also acceptable by the discourse community. The abstract structures with 3 rhetorical units were [IMD], [IMR], [MRD], [IRD], [IDM], and [MID]. Among them, the leading structures were the [IMD] and [IMR] structures (f=21, f=14 respectively) in the corpus. It could demonstrate that in the abstracts, the results unit was most ignored. Such omission in the abstracts of linguistics articles might be due to the notion that results could be withheld to attract readers to read further.

The three unit structure registered the following frequency, with MRD occurring three times, IRD twice, and IDM and MID once each and the two unit structure was ID and IM. As noted, the Results unit was generally missing. Concerning text organization, Salager-Meyer (1990) states that a well-structured abstract in the Medical field not only constitutes four basic structural units, but it also follows a logical ordering of I-M-R-D sequence. Only three abstracts in this study included a different linear sequence, which were [MIRD], [IDM], and

[MID]. This departure from the conventional ordering may be related to the emphasis given to the contribution of the study.

TYPE AND FREQUENCY OF MOVES AND STEPS IN THE INTRODUCTION UNIT

In the Introduction, all three moves, 'establishing a territory' (M1), 'establishing a niche' (M2), and 'occupying the niche' (M3), (following Swales' CARS model) were employed. The divergence was found in their frequency of the moves and the utilised steps. Move 3, 'occupying the niche' (93.70%), was the most frequently used and it is an obligatory move (50% and above in occurrence), which constitutes four steps, 'outlining purposes', 'announcing present research', 'announcing principal findings', and 'indicating RA structure'.

TABLE 4. Frequency of rhetorical moves and steps in the Introduction unit of abstracts

Structural Units	Moves and steps	Frequency of occurrences of Steps	Frequency of occurrences of moves
	Move 1—Establishing a territory		**59**/127 (46.45%)
	Step 1—Claiming centrality	**40**/59 (67.79%)	
	Step 2—Making topic generalizations	**14**/59 (23.72%)	
	Step 3—Reviewing items of previous research	**21**/59 (35.59%)	
	Move 2—Establishing a niche		**38**/127 (29.92%)
	Step 1A—Counter-claiming		
	Step 1B—Indicating a gap	-	
Introduction (N=127)	Step 1C—Question-raising	**38**/38 (100%)	
	Step 1D—Continuing a tradition	-	
	Move 3—Occupying the niche	-	**119**/127 (93.70%)
	Step 1A—Outlining purposes		
	Step 1B—Announcing present research	**119**/119 (100%)	
	Step 2— Announcing principal findings	-	
	Step 3— Indicating RA structure	-	
		-	
Total			**216**

This table indicates the frequency of occurrences of moves and steps which occurred in Introduction unit of abstracts. 127 out of 130 abstracts analysed include a Introduction unit (N=127). 119 (f=119) out of 127 abstracts include M3. However, frequency of steps refer to the frequency of occurrences of steps in each move. For example, M1 occurred 59 times out of 127 abstracts (59/127), however M1S1 occurred 40 times in M1 (40/59).

As shown in Table 4, M3 (93.70%) had the highest percentage among the three moves in the Introduction unit. Step 1A (f=119) was the most prominent step employed in this move, singularly focusing on the 'outlining purposes' in the Introduction. This result is consistent with Martin-Martin's (2003) study in which 160 RA abstracts were analysed in experimental social sciences. The high frequency of this step in the Introduction showed its obligatory positioning. This step is also reported to be highly used in the studies by Pho (2008), who investigated 30 abstracts in Applied Linguistics and Educational Technology. In general terms, this step outlines the intentions behind the paper. In addition, the writers preferred employing present tense verbs in 'outlining purposes' step of the Introduction. This step is illustrated in the following example (in bold):

(1) **This paper examines** the dynamic relationship between vocabulary sizes, text length and text coverage in the English language.

Next to be discussed is M1, 'establishing a territory' (46.45%). The step that involves 'claiming centrality' (f=40) was the most frequently used step. This step was mostly

punctuated by words that denoted positive qualities conveyed through attitudinal adjectives, adverbs or nouns (important, significant, surprisingly, curiously, importance, significance) to emphasise the worth of conducting the research. The excerpt that shows the claiming centrality step is given below:

(2) **It is widely accepted** that learning to use sources is difficult, especially for international postgraduate students.

The M1S3, 'reviewing items of previous research' (f=21), was the second most common step used in M1. The writer tries to support his contention by quoting previous research by other scholars as follow:

(3) **Most previous studies of** epistemic modality in legal settings discuss epistemic modality as performing an interpersonal engagement or a positioning function.

M1S2 'making topic generalization' (f=14), asserts the relevance of the writer's research in the field. The current state of knowledge or description of phenomenon is made known in this step. The following example indicates topic generalization in the Introduction:

(4) **Kala Lagaw Ya is the language of** the Western Torres Strait islands, with two main dialects centred around Saibai Island and Mabuiag Island.

The least frequently occurring move was M2, 'establishing a niche' (29.92%) to justify the researcher's work in the scientific community. This move could be elaborated through four steps, 'counter-claiming', 'indicating a gap', 'question-raising', and 'continuing a tradition'. The only utilised step in M2 was 'indicating a gap' (f=38), totalling 100% in occurrence, in which all the writers attempted to evaluate their research by pinpointing the areas that still required more investigation. Typical linguistic exponents of this step are adversative sentences, which were mainly initiated by the connector, 'however'. The excerpt that shows 'indicating a gap' in M2 are given as follows:

(5) However, while such research has involved surveys of the views and expectations of faculty or the analysis of assignment tasks, **less attention has been given to** the written texts that are the outcomes of assignment tasks.

TYPE AND FREQUENCY OF MOVES AND STEPS IN THE METHOD UNIT

Generally, the Method unit in the RA is characterised by description about how the study was conducted and this included mention of subjects, materials, procedures, instruments and research design utilised in the study. Lim (2006) in his study of Management RAs presented a detailed framework for the Method section that constitutes 3 moves accompanied by many steps and sub-steps. The moves according to Lim (2006) are 'describing data collection procedure', 'delineating procedure for measuring variables', and 'elucidating data analysis procedure'. The present study employed his descriptions in the examining of the Method unit of abstracts. Investigation of the corpus substantiated Lim's finding that all the three moves were found in the Method unit. M1, which described data collection procedure (99.19%), was more dominant than the other moves. This move was accounted for as an obligatory move, which is in line with the findings in Santos's (1996) and Pho's (2008) studies.

TABLE 5. Frequency of rhetorical moves and steps in the Method unit of abstracts

Structural Units	Moves and steps	Frequency of occurrences of Steps	Frequency of occurrences of moves
Method (N=124)	M1:Describing data collection procedure		**123**/124 (99.19%)
	M1S1-Describing the sample	**120**/123 (97.56%)	
	M1S2-*Presenting the utilised framework*	**8**/123 (6.50%)	
	M1S3-Recounting steps in data collection	**28**/123 (22.76%)	
			27/124 (21.77%)
	M2:Delineating procedure/s for measuring variables		
	M2S1-Specifying items in questionnaires/databases	**18**/27 (66.66%)	
	M2S2-Presenting an overview of the design	**23**/27 (85.18%)	
	M2S3-Citing previous research method	**1**/27 (3.70%)	
	M2S4-Describing methods of measuring variables	**1**/27 (3.70%)	
			23/124 (18.54%)
	M3:Elucidating data analysis procedure/s		
	M3S1-Relating data analysis procedure	**23**/23 (100%)	
Total			**173**

Table 5 indicates the frequency of occurrences of moves and steps in the Method unit of abstracts. Out of 130 abstracts, 124 abstracts include the Method unit. M2 occurred 27 times in 124 abstracts (27/124). However, M2S1 (f=18) indicates that this step occurred 18 times in M2 (27), so it refers to the frequency of occurrences of this step in M2 (18/27). M1S1, the 'describing the sample' step accounted for 120 tokens and in M1S3, 'recounting steps in data collection' step followed far behind with only 28 tokens. An excerpt that shows the step is:

(6) **One hundred and six L2 writers reported** their metacognitive processes: generating new ideas, elaborating new ideas, organizing new ideas…

An additional step, namely, 'presenting the utilised framework' was identified in this study, but the frequency of it was low (f=8) and only occupied 6.50% of M1. This could be partly due to the nature of the selected journals in the corpus, which predominantly constituted articles sourced from ESP and EAP journals. The nature of these journals is found to focus mainly on genre analysis studies, with most of them focusing on either reviewing of previous frameworks by other scholars, or presenting a new framework in a novel context. The following example clarifies this step of 'presenting the utilised framework':

(7) **Using Swales' (1990) CARS model** as an analytical tool, this exploratory study investigated 20 research articles.

The next move, M2, 'delineating procedure for measuring variables' (21.77%), was least frequently used in the Method unit. It comprises the description of 'specifying items in questionnaires/databases ', 'presenting an overview of the design', 'citing previous research method' and 'describing methods of measuring variables'. Among the steps, M2S2 (f=23) and M2S1 (f=18) were found to be the more utilised steps. It could be concluded that M2S3 and M2S4 were not frequently used in the Method unit. The following example illustrates the M2S1:

(8) **The analyses in the study drew upon** textual comparisons between student texts and source texts, interview data, and observation notes.

The excerpt that shows the 'research design' step is given below:

(9) **This study is a mixed method,** i.e. qualitative as well as quantitative, analysis of the stylistic characteristics of texts submitted to Japanese Q & A communities.

Finally, M3, the 'elucidating data analysis procedure', constituted only 18.54% of the total occurrence. This consisted only of the 'relating data analysis procedure' step (f=23). This move was found to be the least frequently used move in the Method unit, as in:

(10) **The data were transcribed and analysed** descriptively.

Among the linguistic features, the past tense was consistently used together with the passive form in this step. This inclination for past tense verbs and the passive likely reflected the foregrounding of past decisions and the convention of using the passive to background the researcher or the agent, thus giving the object the limelight in the reporting. In summary, for the Method unit, M1 (99.19%), M2 (21.77%), and followed by M3 (18.54%) was the sequence of occurrence from the highest to the lowest in terms of frequency.

TYPE AND FREQUENCY OF MOVES AND STEPS IN THE RESULTS UNIT

As explained in section 3.1, the Results unit was used minimally in abstract writing. Only two moves were identified for this unit, which were 'statement of findings' and 'comparing result with the literature'. Of the two moves, the abstracts showed an obvious leaning towards the use of the former (98.03%), while the latter only registered 2.94% of use. Table 6 reveals the frequency of each move in the Results unit of the abstracts.

TABLE 6. Frequency of rhetorical moves in the Results unit of abstracts

Structural unit	Moves	Frequency
Results	Statement of findings	**100**/102 (98.03%)
(N=102)	Comparing result with the literature	**3**/102 (2.94%)
Total		**103**

There was indeed a marked difference in the percentage of occurrences of these moves in the Results unit. The lead category occurred in context of making reference to graphs or tables in the study or clarifying the result of the study by examples. Some linguistic features employed in identifying the 'statement of findings' move was the use of nouns, such as 'result', 'finding', 'analysis', followed by reporting verbs, such as 'show', 'indicate' and 'reveal'. Both present and past tenses were employed in the Results unit, affirming their similar presence in Pho's (2008) work abstracts in Applied Linguistics and Educational Technology.

(11) **Results show that** Romanian lateral codas patterned with German, and differently from English.

The 'comparing with the literature' move had quite a negligible presence in the abstracts (2.94%). As an illustration, this move is presented below:

(12) Results of the top 100 high frequency words **were comparable to Fan (2012).**

TYPE AND FREQUENCY OF MOVES IN THE DISCUSSION UNIT

A considerable degree of move overlapping exists between the Results and Discussion sections, this is especially so in the case of abstracts, which are written without headings that serve as lexical clues to identify the different units. In the present study, M3 'commenting on result' in Results, could overlap with M3 'findings' in the Discussions.

It is noticeable that the Conclusion and Discussion units are also merged in RAs, especially when the analysis is patterned along the IMRD structure. In view of this, a conclusion move, 'implication', was accounted for under Discussion move in the abstracts.

Dudley-Evans' (1994) model used in the analysis of Biological sciences RAs is frequently referred to in the investigation of the Discussion section in RAs. The revised version of his model includes 9 moves: 'information move', 'findings', 'unexpected outcome', 'reference to previous research', 'explanation', 'claim', 'limitation', and 'recommendation'. Table 7 shows the type and distribution of each utilised move in the Discussion unit.

TABLE 7. Type and frequency of rhetorical moves in the Discussion unit of abstracts

Structural unit	Moves	Frequency
Discussion (N=113)	Findings	**69**/113 (61.06%)
	Implications	**34**/113 (30.08%)
	Recommendation	**21**/113 (18.58%)
	Reference to previous research	**6**/113 (5.30%)
	Unexpected outcome	**3**/113 (2.65%)
	Limitations	**2**/113 (1.76%)
Total		**135**

Initial analysis demonstrated that the 'findings' move (61.06%) was more dominant and was obligatory compared to the other moves in this unit. It was evident that the results were stated in the Results unit by reference to graphs and tables or were clarified by examples, contrary to the Discussion unit where meaning and importance of the findings were generalised beyond the result of the study. The main signals used in the Discussion unit were references to the findings, such as 'the findings' and 'the result'. Moreover, these clauses were connected with reporting verbs in the present tense e.g. ('suggest that…', or 'indicate that…') which give opinions of the writer based on the data obtained. The usage of that-complement clauses was another lexical cue in the Discussion unit. The following excerpt indicates the 'finding' move:

(13) **Our findings suggest that** English in today's global business environment is 'simply work' and its use is highly contextual.

'Implication' move (30.08%) and 'Recommendation' move (18.58%) were the next moves in the corpus that were present in the Discussion of RA abstracts. Many of the writers concluded their abstracts with one sentence that refers to implication or recommendation of the study. The other moves such as 'reference to previous research', 'unexpected outcome', and 'limitations' were below 5% in frequency and could be considered as negligibly used in the Discussion units of abstracts.

THE OVERALL DISTRIBUTION OF MOVES IN STRUCTURAL UNITS OF ABSTRACTS

Table 8 provides the details about the total frequency of moves in the regular four units of an IMRD abstract. As can be seen, the structural unit with the most number of moves was the Introduction, which comprised 216 moves in the whole corpus. Out of 130 abstracts in this study, only 3 abstracts did not have an Introduction unit and fell into the [MRD] structure. The high occurrence of the Introduction unit could have resulted from what Hyland (2000) describes as the diverse and permeable nature of linguistic articles, especially those in applied linguistics which clearly call for more context and a clear introduction to provide an attractive lead-in for the readers. In this way, the writers could better acquaint the reader with the background of the study. The Introduction unit appears to play an important role in this discipline to motivate the reader to make a decision for reading the complete RA. Table 8 presents the frequency of the analysed units.

TABLE 8. Frequency of rhetorical units of abstracts

Rhetorical Units (IMRD)	Total frequency of moves
Introduction	216
Method	173
Result	103
Discussion	135
Total	**627**

The unit with the second most number of moves was the Method units (f=173). It is not surprising that the percentage of occurrence of moves within the Method units was close to that of the Introduction units (f=216). This resulted in the embedding of these two moves in the abstract structure, which is in line with findings by Hyland (2000) and Martin-Martin (2003). In addition, the methodology part is a 'slow text' in social sciences in which the writers attempt to describe how the study is conducted step-by-step and clarify all the details as well as justify the procedure used in the study for readers. The most striking difference found was between the Results and Discussion units. Discussion (f=135) and Results (f=103) moves occurring as the third and fourth units respectively in the IMRD structure. Six abstracts with [IRD], [ID] and [I] structures did not contain methodology and three abstracts with [IM] and [I] omitted the Discussion. Twenty eight abstracts omit the Results units in their abstracts (refer to Table 8).

Identification of the Results and Discussion boundaries was indeed a daunting task when assistance of lexical clues was sparse. This was further compounded by move overlapping in these two units. However, the higher frequency of the Discussion units could be justified on the grounds that the qualitative and descriptive nature of many linguistic studies might predispose writers to have a stronger tendency towards commenting on results instead of just reporting them. In addition, the Discussion and Conclusion of the study were mostly combined in RAs. The conclusion includes the interpretation of results and pointing to implications or applications. This shows the close relationship between linguistics and practical issues, predominantly that of pedagogy.

In sum, it could be seen that the highest frequency is registered for the Introduction units in abstract writing, confirming the writers' practice in the need to claim the centrality of their topic. This stands in contrast to the low emphasis on the Results units, which suggests that results need not be explicitly declared for initial reading in the abstract. Rather, the reader has to read the RA completely to find out the results.

MOVE CYCLING IN ABSTRACTS

A final pattern that warrants discussion is in connection with move cycling in abstract writing. This phenomenon could be classified as another irregular feature. Out of 130 abstracts in this study, 21 of them were noted as showing the phenomenon of move cycling. The cycle could occur once, meaning that the same unit is only repeated once. In other occurrences, the cycles could be twice or more. Move cycling is a phenomenon that captures the reoccurrence of the moves such as I-M-**I**-R-D (1 cycling), I-M-**I**-R-**M** (2 cycling), and I-M-**I**-R-D-**I**-**D** (3 cycling). It shows an aspect of text development that deserves attention as writers appear to exercise stylistic variations that are acceptable in abstract writing. The detail of cycled moves in each rhetorical units of abstracts can be seen in appendix B.

As an example, the steps, 'announcing the present research', which indicates the purpose of the study in the Introduction units, and 'sample' step in the Method units had the most occurrence of move cycling. The following example shows the cycling of 'purpose' and 'sample' steps respectively:

(14) **This paper investigates** nominal compound production **in the speech of over a 100 English speakers with aphasia**, in the light of current work on compound processing and representation [I+M].

It would appear that move cycling occurred mostly in [I+M+I] and [I+M+I+M] sequences. This reflects that move embedding and move cycling may be related to each other in the abstract structure. The condensed nature of abstract writing likely motivated the writer to utilise two or even more moves in one sentence. The analysis of the abstract structure demonstrated that the Introduction and Method units were frequently embedded, especially for the 'announcing present research' step in the Introduction and 'sample' in the Methodology units of the abstract. It is apparent that most embedded moves result in move cycling as a style of IMRD reporting in the structure of the abstracts.

CONCLUSION

The findings of the study suggest that the majority of abstracts follow the underlying IMRD rhetorical structure of the RAs. The internal structure of I-M-R-D indicated that the Introduction unit is the most frequently used compared to other units and it was also cycled most frequently. In addition, the Results unit was the least used and no cycling was also found for this unit in the abstract structure. Embedding is a common feature causing the merging of several units and subsections. For example, 'announcing present research' step in the Introduction was mostly embedded with the 'sample' step in the Method unit. The sequences of the cycling move were patterned as [I+M+I] and [I+M+I+M]. The feature of embedding appears to be closely linked to the phenomenon of move cycling.

The results of the study have shown that abstract writing for linguistic works forefronts information that serves as the Introduction and the writers appear to regard the Results unit as a peripheral phenomenon if reported in the abstract. This strongly suggests that such 'withholding' of information in relation to result is a strategy commonly practiced among linguistics research writers, possibly for the purpose of inviting the readers to further read the complete article to arrive at the findings themselves and make judgments about them. Thus a rigid adherence to the IMRD structure may not enhance the persuasion element that is inherent to the purpose of an abstract. This practice is noteworthy especially for new members of the discourse community, who often need guidelines to improve their writing. While conventions may govern the norm in practice, the writer could add on to 'the tricks of the trade' to become more sensitive to actual practice, thus adding variations in style and strategy. Peculiarities like embedding and move cycling could be highlighted as other irregular features of abstract writing.

In general, this study investigated both the macro and micro structures of abstract writing in the field of Linguistics. The initial analysis of the internal structure of abstracts conducted by the composite framework, which helped to guide us to determine which moves are more highlighted in each IMRD units of the abstracts written by linguists. Thereupon, the knowledge was synthesised to give a more in-depth analysis of the macro and micro structures of abstracts. In turn, the comparison with their corresponding RAs structure reveals that deviations are well tolerated in abstract writing. This comparison provides a novel angle in the investigations on abstracts. As seen in the findings of this study, only 63.84% of abstracts followed the structure of their RAs (81 out of 130 abstracts), the other abstracts chose not to adhere to the IMRD structure of RAs. In fact, variations ranged from, 3, 2, and even 1 constituent unit. As a result, it appears to support the claim that the abstract and the RA as two different genres. In addition, the findings serve to inform EAP instructors who

could differentiate between abstract writing and RA writing in their writing programmes. The available corpus could be used as teaching materials whereby graduate students could compare the genres and move patterns to realise the structure especially the embedding feature. In this way writers become sensitive to writing styles that can be used and not be slavishly tied to just one method of development of the abstract.

It is significant to note that the IMRD structure is not the main contention in the present study, but also the correspondence of the structure of RA with its abstract. Previous research had extensively investigated the rhetorical structure of these two genres on their own, but investigation on the relationship between genres is considerably understated. The present study has attempted to break new grounds in genre comparison with insights into abstract writing which is seen to have its own variations.

The EAP teacher subsequently is more empowered to lead students to go into standard practice and also the variations in style and approach in text organisation. The next focus for EAP teachers could be related to the micro structure of abstracts. With specific examples to help in the modelling of authentic writing, instructors could highlight the way embedding are written. The realisation of the functional purposes together with the linguistic moves could give directions to clear writing. In addition, the findings of this study could clearly assist the textbooks developers to include information focused on the move structures of the RAs and abstracts and their rhetorical sections and how the related genres are similar or different.

Finally, some suggestions are forwarded for research extension. In this study only articles on Linguistics were examined for the IMRD manifestation. A comparison with science articles would reveal insightful details about similar or differing practices of the two discourse communities. The current study emphasised the IMRD structure in abstract writing with the belief that a similar pattern exists for the full RA that follows. This premise could be challenged through an inter-genre analysis, where the RA and the abstract as two different genres in two or more disciplines could be examined and compared to realise the patterns. Corpus studies also call for bigger and more varied samples to be pooled in order to give accessibility for analysis. Such corpus building through research will enhance our knowledge about abstract writing and in general, the workings of academic writing, which plays a fundamental yet vital role in knowledge dissemination the world over.

REFERENCES

Ahmad, U. (1997). Scientific research articles in Malay: a situated discourse analysis. Unpublished doctoral dissertation, University of Michigan, Ann Arbor.

Becher, T. & Trowler, P. R. (2001). *Academic tribes and territories: Intellectual enquiry and the culture of disciplines*. Buckingham; Philadelphia: Society for Research into Higher Education & Open University Press.

Bhatia, V. K. (1993). *Analysing Genre: Language Use in Professional Settings*. London: Longman.

Biber, D. & Conrad, S. (2009). *Register, Genre and Style.* Cambridge: Cambridge University Press.

Bonn, S. V. & Swales, J. M. (2007). English and French journal abstracts in the language sciences: Three exploratory studies. *Journal of English for Academic Purposes*, *6*(2), 93-108.

Brett, P. (1994). A genre analysis of the results section of sociology articles. *English for Specific Purposes,* 13, 47–59.

Chan, S. H., Ebrahimi, S. F. (2012). Marked themes as context frames in research article abstracts. *GEMA Online® Journal of Language Studies*, *12*(4), 1147-1164.

Crookes, G. (1986). Towards a validated analysis of scientific text structure. *Applied Linguistics*, *7*(1), 57-70.

Dahl, T. (2004). Some characteristics of argumentative abstracts. *Akademisk Prosa, 2,* 49–67.

Dudley-Evans, T. (1994). Genre analysis: An approach to text analysis for ESP. In M. Coulthard (Ed.), A*dvances in Written Text Analysis* (pp. 219-228). London: Routledge.

Hirano, E. (2009). Research article introductions in English for specific purpose: A comparison between Brazilian Portuguese and English. *English for Specific Purposes, 28*, 240-250.

Holmes, R. (1997). Genre analysis and the social sciences: An investigation of the structure of research article discussion sections in three disciplines. *English for Specific Purposes*, *16*, 321-337.

Hopkins, T. & Dudley-Evans, T. (1988). A genre-based investigation of the discussion section in articles and dissertations. *English for Specific Purposes*, *7*,113-122.

Hyland, K. (2000). *Disciplinary Discourses: Social Interactions in Academic Writing*. Harlow: Pearson Education.

ISO 214 - 1976 (E). International Organization for Standardization. *Documentation – Abstracts for publications and documentation*. Geneva: International Organization for Standardization.

Kanoksilapatham, B. (2005). Rhetorical structure of biochemistry research articles. *English for Specific Purposes, 24,* 269-292.

Lim, J. M. H. (2006). Method sections of management research articles: A pedagogically motivated qualitative study. *English for Specific Purposes*, *25*(3), 282-309.

Loan, N. T. T., Qian, L., Linh, N. D., & Pramoolsook I. (2014). TESOL conference abstracts: Discrepancies between potential writers' knowledge and actual composition. *3L: The Southeast Asian journal of English Language Studies*, *30*(3), 161-176.

Lores, R. (2004). On RA abstracts: from rhetorical structure to thematic organization. *English for Specific Purposes*, *23,* 280-302.

Martin-Martin, P. (2003). A genre analysis of English and Spanish research paper abstracts in experimental social sciences. *English for Specific Purpose*, *22*(1), 25- 43.

Martín-Martín, P. (2005). *The Rhetoric of the Abstract in English and Spanish Scientific Discourse*. Bern: Peter Lang.

Melander, B., Swales, J. M, & Fredrickson, K. M. (1997). Journal abstracts from three academic fields in the United States and Sweden: national or disciplinary proclivities? In A. Duszak (Ed.), *Culture and styles of academic discourse* (pp. 251–272). New York: Mouton de Gruyter.

Nwogu, K. N. (1997). The medical research paper: Structure and functions. *English for Specific Purposes*, *16,* 119-138.

Peacock, M. (2002). Communicative moves in the discussion section of research articles. *System*, *30*, 479–497.

Pho, P. D. (2008). Research article abstracts in applied linguistics and educational technology: a study of linguistic realizations of rhetorical structure and authorial stance. *Discourse Studies*, *10*(2), 231-250.

Postegiullo, S. (1999). The schematic structure of computer science research articles. *English for Specific Purposes*, *18,* 139–160.

Salager-Meyer, F. (1990). Discoursal flaws in medical English abstracts: a genre analysis per research- and text-type. *Text*, *10*(4), 365–384.

Samraj, B. (2005). An exploration of a genre set: research article abstracts and introductions in two disciplines. *English for Specific Purposes*, *24*(2), 141-156.

Santos, M. B. (1996). The textual organization of research paper abstracts in applied linguistics. *Text*, *16*(4), 481–499.

Sauperl, A., Klasinc, J. & Luzar, S. 2008. Components of abstracts: logical structure of scholarly abstracts in pharmacology, sociology, and linguistics and literature. *Journal of the American Society for Information Science and Technology*, *59*, 1420-1432.

Stotesbury, H. (2006). Gaps and false conclusions: criticism in research article abstracts across the disciplines. In K. Hyland, & M. Bondi (Eds.), *Academic Discourse across Disciplines* (42, pp. 123-148). New York: Peter Lang.

Swales, J. M. (1981). *Aspects of Article Introductions.* Birmingham, England: Language Studies Unit, University of Aston.

Swales, J. (1990). *Genre Analysis.* Cambridge: Cambridge University Press.

Swales, J. M. (2004). *Research Genres: Explorations and Applications.* Cambridge, UK: Cambridge University Press.

Swales, J. M. & Feak, C. B. (1994). *Academic Writing for Graduate Students: Essential Tasks and Skills*. Ann Arbor: University of Michigan Press.

Swales, J. M. & Feak, C. B. (2009). *Abstracts and the Writing of Abstracts.* Ann Arbor, MI: University of Michigan Press.

Thompson, D. (1993). 'Arguing for experimental 'facts' in science. A study of research article results section in biochemistry'. *Written Communication*, *19*(1), 106-128.

Ventola, E. (1994). Abstracts as an object of linguistic study. In S. Čmejrková, F. Daneš, & E. Havlová (Eds.). Writing vs. speaking: language, text, discourse, communication, pp.333-352. Tübingen: Gunter Narr.

Williams, I. A. (1999). Results sections of medical research articles: Analysis of rhetorical categories for pedagogical purposes. *English for Specific Purposes*, *18*, 347–366.

Yang, R. & Allison, D. (2003). Research articles in applied linguistics: moving from results to conclusions. *English for Specific Purposes*, *22*, 365–385.

APPENDIX A

COMPOSITE FRAMEWORK

Frameworks		*Rhetorical moves*
Introduction section	Swales' CARS (1990) model	**Move 1**—Establishing a territory Step 1—Claiming centrality Step 2—Making topic generalizations Step 3—Reviewing items of previous research **Move 2**—Establishing a niche Step 1A—Counter-claiming Step 1B—Indicating a gap Step 1C—Question-raising Step 1D—Continuing a tradition **Move 3**—Occupying the niche Step 1A—Outlining purposes Step 1B—Announcing present research Step 2— Announcing principal findings Step 3— Indicating RA structure
Method section	Lim's (2006) model	**Move 1:** Describing data collection procedure/s Step 1: Describing the sample (a) Describing the location of the sample (b) Describing the size of the sample/population (c) Describing the characteristics of the sample (d) Describing the sampling technique or criterion Step 2: Recounting steps in data collection Step 3: Justifying the data collection procedure/s (a) Highlighting advantages of using the sample (b) Showing representativity of the sample **Move 2:** Delineating procedure/s for measuring variables Step 1: Presenting an overview of the design Step 2: Explaining method/s of measuring variables (a) Specifying items in questionnaires/databases (b) Defining variables (c) Describing methods of measuring variables Step 3: Justifying the method/s of measuring variables (a) Citing previous research method/s (b) Highlighting acceptability of the method/s **Move 3:** Elucidating data analysis procedure/s Step 1: Relating (or _recounting_) data analysis procedure/s Step 2: Justifying the data analysis procedure/s Step 3: Previewing results
Results section	Yang and Allisons' (2003) model	**Move 1:** preparatory information **Move 2:** reporting results **Move 3**: commenting on results Step 1: interpreting results, Step 2: comparing with the literature, Step 3: evaluating results, Step 4: accounting for results **Move 4:** summarizing results **Move 5:** evaluating results Step 1: indicating limitations, Step 2: indicating significance **Move 6:** deductions from the research Step 1: recommending further research
Discussion section	Dudley-Evans' (1994) model- revised version	**M1:** Information move **M2:** Statement of result **M3:** Findings **M4:** (Un)expected outcome **M5:** Reference to previous research **M6:** Explanation **M7:** Claim **M8:** Limitation **M9:** Recommendation

APPENDIX B

TYPE OF CYCLED MOVES IN EACH RHETORICAL UNIT OF ABSTRACTS

1 cycling	-Claiming centrality [I]+ purpose [I]+ sample [M]+ gap **[I]** + statement of results [R] -Claiming centrality [I]+ Materials [M]+ sample [M]+ purpose **[I]**+ statement of results [R]+ findings [D] -Purpose [I] + sample [M]+ statement of results [R]+ materials **[M]** + findings [D] -Purpose [I]+ sample [M]+ topic generalization **[I]** + reviewing items of previous research [I]+ sample [M]+ data collection [M]+ data analysis [M]+ findings [D] -Purpose [I]+ sample [M]+ **purpose [I]** + findings [D] -Topic generalization [I]+ recommendation [D]+ sample [M]+ data analysis [M]+ findings **[D]** -Claiming centrality [I]+ sample [M]+ purpose [I]+ data collection **[M]**+ statement of results [R]+ findings [D] -Topic generalization [I]+ purpose [I]+ sample [M]+ **purpose [I]**+ statement of results [R]+ implications [D] -Purpose [I]+ sample [M]+ claiming centrality **[I]**+ statement of results [R]+ findings [D] -Reviewing items of previous research [I]+ purpose [I]+ sample [M]+ **purpose [I]** -Reviewing items of previous research [I]+ purpose [I]+ sample [M]+ **purpose [I]**+ findings [D]+ recommendations [D]+ implications [D] -Materials [M]+ gap [I]+ purpose [I] + sample **[M]** + findings [D] -Purpose [I]+ sample [M]+ topic generalization **[I]** + findings [D]+ reference to previous research [D]+ implications [D] -Purpose [I]+ sample [M]+ gap **[I]** + statement of results [R]+ recommendations [D]
2 cycling	-Purpose [I]+sample [M]+ research questions **[I]**+ **sample [M**]+ data analysis [M]+ statement of results [R]+ implication [D] -Reviewing items in previous research [I]+ purpose [I]+ sample [M]+ **purpose [I]**+ **sample [M]** + findings [D]+ recommendation [D] -Purpose [I]+ reviewing items of previous research [I]+ sample [M]+ gap **[I]**+ **sample [M]**+ statement of results [R] -Purpose [I]+ sample [M]+ findings [D]+ **purpose [I]**+ reference to previous research **[D]** -Purpose [I]+ sample [M]+ **purpose [I]** + statement of results [R]+ data analysis **[M]**
3 cycling	-Purpose [I]+ sample [M]+ reviewing items in previous research **[I]** + statement of result [R]+ reference to previous research [D]+ research questions **[I]** + recommendation **[D]**